

- **Federal Agency Name** – Defense Advanced Research Projects Agency (DARPA)/
Microsystems Technology Office (MTO)
- **Funding Opportunity Title** – Tip-Based Nanofabrication (TBN)
- **Announcement Type** – Initial Announcement
- **Catalog of Federal Domestic Assistance Numbers (CFDA)** – N/A
- **Important Dates**
 - Proposal Abstract due no later than 4:00 p.m. Eastern Time on Thursday,
September 27, 2007
 - Proposal due no later than 4:00 p.m. Eastern Time on Thursday, November
15, 2007.
- **Anticipated individual awards** – Multiple awards are anticipated.
- **Types of instruments that may be awarded** -- Procurement contract, grant,
cooperative agreement or other transaction.
- **The technical POC for this effort is:**
Thomas Kenny, Ph.D.
Program Manager
DARPA/MTO
3701 North Fairfax Drive
Arlington, VA 22203-1714
Fax: (703) 741-0079
Email: Thomas.kenny@darpa.mil

BAA 07-59

TIP-BASED NANOFABRICATION (TBN)



Thomas Kenny, Ph.D.
Program Manager
DARPA/MTO
3701 N. Fairfax Drive
Arlington, VA 22203-1714
Fax: (703) 741-0079
Email: thomas.kenny@darpa.mil

SECTION I: FUNDING OPPORTUNITY DESCRIPTION

The Defense Advanced Research Projects Agency often selects its research efforts through the Broad Agency Announcement (BAA) process. The BAA will appear first on the FedBizOpps website, <http://www.fedbizopps.gov/>, and Grants.gov website at <http://www.grants.gov/>. The following information is for those wishing to respond to the BAA.

DARPA is soliciting innovative research proposals in the area of Tip-Based Nanofabrication (TBN). The primary goal is to develop the capability to fabricate nanostructures, such as nanowires, nanotubes, and quantum dots, with nanometer-scale control over the size, orientation, and position of each nanostructure. With this capability, real technologies based on nanowires, nanotubes, and quantum dots, as well as many other nano-scale structures, should be possible for the first time.

One enabling approach to controlled nanofabrication may be through the use of functionalized AFM cantilevers and tips. Functionalized AFM cantilevers and tips can manipulate environments at the sub-micrometer scale on the surface of a substrate, creating high temperatures, high electric and magnetic fields, high fluxes of many types, as well as rapid temporal and spatial variations of all of the above and more. The submicron region near a functionalized tip is potentially a unique, localized, controllable “manufacturing environment”, wherein new methods for controlled nanofabrication are possible.

Other approaches to controlled nanofabrication (i.e., non tip-based) are possible and also of interest to DARPA in this program.

Proposed research should investigate innovative approaches that enable revolutionary advances in science, devices, or systems. Specifically excluded is research that primarily results in evolutionary improvements to the existing state of practice.

Background and Description

There is very significant interest throughout industry, academia, and the DoD in the potential of nanostructured materials and nanodevices to provide many benefits. There have been so many claims made about the potential capabilities of quantum dots, nanotubes, nanowires and other nanostructures that there is no point at all in reciting them here. The goal of this program is to develop methods for controlled nanomanufacturing, with the intent of unlocking the potential capabilities of nanotechnology.

For the purpose of this BAA, “controlled nanomanufacturing” is defined as *automated, parallel fabrication of individual nanostructures with control over position, size, shape, and orientation at the nanometer scale, including the ability to fabricate devices with controlled differences in size, shape, and orientation at different positions. This capability should include the ability for in-situ detection of the nanostructure*

position, size, shape, and orientation, and the ability to repair or re-manufacture structures as needed.

Presently, controlled nanomanufacturing is not possible. There have been numerous demonstrations of the capability to grow, deposit, or manipulate nanostructures in recent years, but these all suffer from significant deficiencies when viewed against the above-stated goal of controlled nanomanufacturing. For example, dense, aligned “forests” of carbon nanotubes can be grown, even with pre-growth lithography to define the regions of growth. This technique, however, cannot controllably grow individual nanotubes, or control their orientation or dimensions. There are examples of quantum dot growth from catalyst seeds with the potential to create large arrays with high uniformity. There is no ability, however, for controlled manufacturing of patterned arrays of 2 different quantum dots, and there is no ability to repair the nonuniformity that typically arises from these growth processes. There are examples of methods for capturing, manipulating, and placing individual nanowires into arrangements needed for device construction, but these are very slow, rely on a nearby “cache” of suitable sizes and shapes, and very challenging methods for manipulation, metrology and repair. None of the presently-emerging approaches appear to provide a path to controlled nanomanufacturing.

There have been some significant efforts that may provide building blocks towards the goal of controlled nanomanufacturing. Perhaps the most notable and successful is the IBM Millipede program. The goal of this effort at IBM is a topographic data storage technology that uses large arrays of AFM cantilevers to form indentations (by heating) and to detect those indentations (by a thermal method). The present demonstrations include parallel fabrication, detection, and modification of indentations with spacing of 18 nm between tracks and 9 nm within a track, and depth of 1 nm. This work includes many of the features of the above definition of controlled nanomanufacturing, and is strong motivation to consider AFM tips as tools for nanomanufacturing in a much broader sense.

AFM tips have interesting and unique potential as nanomanufacturing tools. They presently serve as one of the most broadly useful tools that can reach across the interface from macro to micro/nano. The scientific community has 20 years of experience in building macroscopic instruments for manipulation of AFM tips, adding functionality to those tips, and extracting signals and information from surfaces and interfaces through interactions with those tips. Combined with the efforts at IBM to address many problems with parallel operation, array manipulation, wear, materials, etc., there is an opportunity today for exploration of tips as nanomanufacturing tools.

There are certainly other methods for controlled nanomanufacturing that will be considered. The goal of the BAA is capabilities, regardless of the method for achieving them. Any approach that can meet the program requirements will be considered.

Program Requirements

The objective of the TBN program is to develop technologies for controlled nanomanufacturing.

There is an almost-infinite list of materials, structures, and treatments that are of potential importance to nanodevice applications. In order to provide a framework for a more focused program that can deliver capabilities of much broader use, the TBN program will focus on controlled nanomanufacturing of nanowires, nanotubes and quantum dots. Success in controlled nanomanufacturing of nanowires, nanotubes, and quantum dots will directly enable many important applications, and the capabilities developed for this subset of nanostructures should be extendable to many other structures, materials, and treatments.

Within this focus, the program requirements are:

Generic

- **Feature Size Control:** Fabrication of individual nanostructures with 1% or smaller variations in the size (length, diameter, radius, orientation) of the structure.
- **Feature Position Control:** Fabrication of individual nanostructures with control over position to 5 nm.
- **Heterogeneity:** Fabrication of individual nanostructures with continuously controlled variations in at least 2 different parameters (such as size, shape, orientation, ...) to an accuracy of 1%.

Tip-Specific

- **Fabrication Rate:** The final program goal is for operation of a 30-element linear array with controlled feature fabrication at a rate of 1 feature/tip/second.
- **Height Sensing/Control:** The height of the tip above the surface must be sensed to an accuracy of 2 nm.
- **Tip Wear:** Tip shape variations of less than 1% in height and 3% in radius after 1e6 operations.

Non-Tip Approaches

Metrics on fabrication rate, position sensing, and variations/degradation of the components will be defined as needed.

Each proposal is expected to select nanowires, nanotubes, and/or quantum dots as the focus of their effort. Proposal to fabricate nanostructures or devices other than nanowires, nanotubes or quantum dots will not be supported in this BAA.

DARPA is interested in methods for controlled nanomanufacturing that rely on tip-based approaches, as well as approaches that do not include tips. The specific issues that must be overcome in order to allow manufacturing at acceptable rates and with acceptable repeatability over long periods will be defined for non-tip approaches, depending on the details and issues associated with those approaches. Proposers interested in non tip-based methods should suggest appropriate requirements to serve in place of the tip-specific requirements in this program.

Additional Features

In addition to the requirements listed above, DARPA is interested in approaches which offer additional features that provide interesting or unexpected advantages in controlled nanomanufacturing. Proposals are not required to include any of these features, but proposals that include some of these features may be more interesting to DARPA than proposals that do not.

DARPA is interested in controlled nanomanufacturing approaches that can provide structure-by-structure control over other characteristics of nanostructures. For example, the chirality of carbon nanotubes impacts many of the properties of interest in nanodevices, and a manufacturing method that can control this aspect of nanotubes in conjunction would be very interesting. DARPA is also interested in the ability to fabricate structures with controlled variations in other properties, such as conductivity, crystallinity, crystal orientation, and others.

DARPA is interested in controlled nanomanufacturing methods that require minimal preparation of the substrate. Approaches which can be carried out on ordinary widely-available substrates are preferred over approaches that require unusual materials, crystal orientations, or complicated topographies.

DARPA is interested in controlled nanomanufacturing approaches which are compatible with the presence of pre-existing structures or devices, such as foundry CMOS. An advantage associated with the confinement of the manufacturing environment to a submicron region is the ability to preserve the characteristics of pre-existing devices. DARPA is interested in approaches that can minimize the separation between pre-existing CMOS and nanomanufactured structures, and is especially interested in approaches that can build interconnects between CMOS and nanostructures.

For approaches that rely on the use of tips, the wear and degradation of the tip is an important concern. DARPA is interested in methods and approaches that can preserve the performance of the tip over many manufacturing cycles, which may include methods for in-situ sharpening or cleaning the tip, or replacing tips as needed. Methods for in-situ detection of the wear or degradation of the tip may be an important part of this interesting capability.

TBN Program Milestones

Proposers must define their TBN approach and describe in detail how the performance characteristics of their designs will satisfy the requirements of the program. Though the performance characteristics will depend on the particular architecture proposed, DARPA envisions some common performance metrics and some metrics specific to the proposed architecture. Program metrics to be used for go/no-go evaluations between phases will be drawn from this list:

<i>Metric</i>	<i>Unit</i>	<i>Phase I</i>	<i>Phase II</i>	<i>Phase III</i>
Feature Position Control	nm	50	25	5
Feature Size Control ⁽¹⁾	% of dimension	10%	3%	1%
Heterogeneity ⁽²⁾		2 values of one parameter	5 values of 2 parameters	Continuous control over 2 parameters
Feature Rate ⁽³⁾		1/min Single tip	5/min/tip 5-tip array	60/min/tip 30-tip array
Tip Shape Variation ⁽⁴⁾	% of dimension	Height<10%, Radius<20% 100 operations	Height<5%, Radius<10% 1000 operations	Height<1%, Radius<3% 1e6 operations
Tip Height Sensing	nm	20 nm	10 nm	2 nm

- (1) This metric is specifying the length of a nanowire or the diameter of a quantum dot. For example, a 1000 nm nanowire needs to be grown with variations of less than 100 nm in the first phase.
- (2) This metric is a statement of the requirement that nanostructures be fabricated with controlled variations in parameters. For example, nanowires must be grown with 2 different lengths (or radii). Specifically, 1000 nm +/- 10% and 2000 nm +/- 10% would meet the first phase milestone. These must be grown on the same substrate using the same apparatus, one after the other.
- (3) In Phase 1, a single tip is expected to be used. In Phases 2 and 3, linear arrays of 5 and 30 are required respectively. For non-tip approaches, we anticipate definition of metrics with the same total feature rates, but with arrays and other aspects of parallelism defined on the basis of the approach.
- (4) For tip-based proposals, this metric is a statement that the shape of the tip should not significantly change during operation. The underlying assumption is a conical-shaped tip with a spherical end. Different tip geometries should still be parameterized by an overall “height” and the radius of curvature of the end, and these metrics can apply. For non-tip approaches, an alternate metric will be constructed, depending on the details of the approach. Note that this requirement implicitly requires continuous operation for 100 minutes on Phase 1, 40 minutes in Phase 2, and 8 hours of operation in Phase 3. “Proof” of success for the phase transitions should consist of images of all the features made in these intervals with confirmation that all features are consistent with the other milestone requirements.

Explanations and Rationale for Metrics

Position Control The location of nanostructures with respect to each other or with respect to pre-existing features on a substrate is an important parameter to control to nm accuracy. The targets for the 3 phases are set to be consistent with use of ordinary AFM instrumentation in the first phase, and a transition to customized scanning platforms in later stages. The use of AFM methods to detect the position of reference markers on the substrate prior to, during and after the fabrication is a potential method for achieving and verifying this milestone.

Size Control The properties of nanostructures are generally strongly dependent on the dimensions of the structure. The ability to fabricate a specific structure with a specific dimension is essential to the use of the unique dimension-dependent properties in devices. This capability is generally absent in most existing nanostructure fabrication methods, and is regarded as a key goal of this program. The targets are set so that, even in Phase 1, a fabrication method with control of the local environment is probably necessary, thereby excluding many presently-available methods for uncontrolled growth. The increases in precision in later stages are intended to drive the program towards even more precise control of the tools and environment. In-situ metrology and a capability for fabricate-measure-trim capability are anticipated as likely methods for meeting and verifying this milestone.

Heterogeneity An important feature of this program is the targeted capability to fabricate nanostructures that are intentionally different from one to the next. This capability is generally absent in nanodevice fabrication. The addition of this milestone to this program is based on the understanding that many nanodevices cannot be built from arrays of identical (size, shape, orientation) nanostructures. Local tuning of structure characteristics is probably only possible through local control of the fabrication environment, which all successful approaches are expected to require. Rather than specify the details of the environmental control (which would impose assumptions about the method that might include the best ideas), we have selected specifications on the fabrication outcome. In the proposals, proposers are expected to describe the relationship between these outcome specifications and the operational specifications for their approach.

Feature Rate A goal for this program is the demonstration of a controlled nanomanufacturing technology that can scale to useful quantities of throughput. Without a specific application and process in mind, it is not possible to define the required rates. The thresholds for this milestone are set with the understanding that automation and parallel operation will eventually be required, and that these are difficult to implement. In Phase 1, the feature rate can probably be accomplished without automation, which allows program effort to focus elsewhere. In later phases, the rates are set to be high enough as to be possible only through parallel operation and automation and may require development of 2-axis scanning platforms with integrated sensing.

Tip Shape Variation In any localized manufacturing method, the stability of the geometry and characteristics of the local tools is important. For tip-based methods, the size and shape of the tip is likely to be important for maintaining control of the shapes and positions of the manufactured structures. The metrics are set in ranges where Phase 1 will probably allow success without significant effort in materials, but the later phases will be dependent on a growing understanding of wear and reliability, and on development of methods for limiting wear. For proposals that do not utilize a “tip”, it will be necessary to identify key parameters of those tools and developing an equivalent set of metrics to make progress towards the degree of stability needed for control over position and dimensions of the fabricated structures.

Tip Height Sensing For tip-based nanofabrication the ability to detect height above the surface is considered to be essential. Control of this separation is important to the control of the environment near the tip, and it is likely that methods will operate at least some of the time with the tip out of contact with the substrate. In Phase 1, demonstration of a method for sensing this separation is necessary. In Phases 2 and 3, this method should be integrated with the arrays to enable use during the automated fabrication. For methods that do not rely on a “tip” an equivalent metric will be defined, based on the need for control of some important dimension

Phase Structure Rationale It is anticipated that development of a new method for use of a “tip” for local control of a manufacturing environment, and demonstration of the position and dimensional controls as needed is a very significant challenge. To the extent possible, explicit requirements for arrays, speed, automation, etc. have been delayed to allow effort in Phase 1 to focus on the first challenge of simply making a nanostructure in this new way. Once proposers are able to make nanostructures with preliminary control over position, size, shape, orientation, the program will shift focus to the other capabilities needed for controlled nanomanufacturing. It is important that the technology developed in Phase 1 be compatible with the later requirements for automation, throughput, etc. Therefore, proposers must address their plans for reaching the final program requirements with the technologies developed in Phase 1, and highlight the effort in the later phases that is necessary to meet these goals.

Program Rationale There are many nanostructures that could have been included in this program. The restriction to nanowires, nanotubes and quantum dots is intentional, and should generate much of the technology needed for other applications without all of the materials and associated issues of a longer list of structures. The restriction to use line arrays is intentional, and avoids some of the more significant challenges associated with control and manipulation of 2D arrays, while still forcing some advancement of technology needed for parallel operation and high throughput. There are other restrictions and similar reasoning behind each of them. NSF and other agencies have already funded the basic research to show that nanodevices are potentially very interesting. DARPA has identified a need and opportunity for a more focused program to enable controlled nanomanufacturing. If this program is successful, other agencies and organizations can customize and optimize as needed for specific applications and opportunities.

Deliverables

The primary data deliverables will include quarterly reports throughout the program and participation in semi-annual progress reviews (either on-site or at DARPA PI meetings). Near the end of each phase, data showing the completion of the key milestones must be provided to the program manager in a to-be-negotiated format.

Program Scope

The TBN program will consist of three phases. The length of each phase shall be determined by the bidder and will be considered under the evaluation criteria. Generally, phases of shorter duration are preferred, but it is important that the phases include appropriate time and effort to meet the challenges associated with that phase. Each phase shall have measurable go/no-go metrics, based on the table presented above. The focus of each phase is described below:

Phase 1 *Fundamental Controlled Nanofabrication Demonstration.* In this phase, performers are expected to investigate new approaches for locally-controlled fabrication of nanowires, nanotubes, or quantum dots. As these methods do not generally exist today, there is significant effort just in fabricating the first structure. Additional effort to demonstrate control over placement, size, shape and orientation will be directed towards meeting the first phase milestones. It is expected that most performers will utilize single customized cantilevers and tips together with customized AFM instruments to complete the demonstrations. For approaches that do not require tips, an equivalent single-domain fabrication approach will be expected. In all cases, it should be clear that there is a pathway to parallel, automated operation.

Phase 2 *Integration and First Parallel Fabrication.* In this phase, scaling to modest parallel operation for controlled nanofabrication is the main focus of effort. The requirements are for 5 tips to be operating in parallel with independent control. The fabrication rate is intentionally set at a level where building block automation is possible, but where manual operation is not. The requirement for 5-element arrays is intended to force the teams to address all the issues of parallel operation while still building modest-scale infrastructure. Increases in the requirements for position and size control are intended to require additional effort in these areas while building the 5-element systems. The need for tip/tilt control of the array is not an explicit requirement, but is implicit in the operation of 5 elements in parallel. Effort in this phase on new approaches to manipulation and scanning of the array are appropriate.

Phase 3 *Performance Optimization and Scale-up.* In this phase, the requirements for precision and control are extended to reach the needs of many nanostructure applications. Operation of 30-element parallel arrays at higher rates is required, leading to a need for greater automation of the manufacturing process.

SECTION II: AWARD INFORMATION

Multiple awards are anticipated. The amount of resources made available under this BAA will depend on the quality of the proposals received and the availability of funds.

The Government reserves the right to select for negotiation all, some, one, or none of the proposals received in response to this solicitation, and to make awards without discussions with offerors. The Government also reserves the right to conduct discussions if the Source Selection Authority later determines them to be necessary. If warranted, portions of resulting awards may be segregated into pre-priced options. Additionally, DARPA reserves the right to accept proposals in their entirety or to select only portions

of proposals for award. In the event that DARPA desires to award only portions of a proposal, negotiations may be opened with that offeror. If the proposed effort is inherently divisible and nothing is gained from the aggregation, offerors should consider submitting it as multiple independent efforts. The Government reserves the right to fund proposals in phases with options for continued work at the end of one or more of the phases.

Awards under this BAA will be made to offerors on the basis of the evaluation criteria listed below (see section labeled “Application Review Information”, Sec. V.), and program balance to provide overall value to the Government. Proposals identified for negotiation may result in a procurement contract, grant, cooperative agreement, or other transaction depending upon the nature of the work proposed, the required degree of interaction between parties, and other factors. Offerors should note that the required degree of interaction between parties, regardless of award instrument, will be high and continuous.

SECTION III: ELIGIBILITY INFORMATION

A. Eligible Applicants

All responsible sources capable of satisfying the Government's needs may submit a proposal that shall be considered by DARPA. Historically Black Colleges and Universities (HBCUs), Small Businesses, Small Disadvantaged Businesses and Minority Institutions (MIs) are encouraged to submit proposals and join others in submitting proposals; however, no portion of this announcement will be set aside for these organizations' participation due to the impracticality of reserving discrete or severable areas of this research for exclusive competition among these entities. Independent proposals from Government/National laboratories may be subject to applicable direct competition limitations, though certain Federally Funded Research and Development Centers are excepted per P.L. 103-337§ 217 and P.L 105-261 § 3136.

Foreign participants and/or individuals may participate to the extent that such participants comply with any necessary Non-Disclosure Agreements, Security Regulations, Export Control Laws, and other governing statutes applicable under the circumstances.

1. Procurement Integrity, Standards of Conduct, Ethical Considerations, and Organizational Conflicts of Interest

It has been confirmed that the DARPA Program Manager responsible for this BAA is assigned under the Interdepartmental Personnel Act (IPA) program and, as such, is likely to have a potential conflict of interest with Stanford University. Because the Program Manager may be employed by an offeror that responds directly to this BAA, Stanford University may have a conflict of interest with a potential offeror, should they choose to respond.

Certain post-employment restrictions on former federal officers and employees may exist, including special Government employees (18 U.S.C. 207). If a prospective proposer believes that a conflict of interest exists, the situation should be raised to the DARPA Technical Point of Contact specified in Sec. VIII. before time and efforts are expended in preparing a proposal. All proposers and proposed subcontractors must therefore affirm whether they are providing scientific, engineering, and technical assistance (SETA) or similar support to any DARPA technical office(s) through an active contract or subcontract. All affirmations must state which office(s) the proposer supports and identify the prime contract numbers. Affirmations shall be furnished at the time of proposal submission. All facts relevant to the existence or potential existence of organization conflicts of interest (FAR 9.5) must be disclosed. The disclosure shall include a description of the action the proposer has taken or proposed to take to avoid, neutralize, or mitigate such conflict.

B. Cost Sharing/Matching

Cost sharing is not required for this particular program; however, cost sharing will be carefully considered where there is an applicable statutory condition relating to the selected funding instrument (e.g. for any Other Transactions under the authority of 10 U.S.C. § 2371). Cost sharing is encouraged where there is a reasonable probability of a potential commercial application related to the proposed research and development effort.

C. Other Eligibility Criteria

1. Collaborative Efforts

Collaborative efforts/teaming arrangements composed of partners from academia, industry, and national laboratories are encouraged and should be explained thoroughly in the proposal abstracts and full proposals. Integrated teams capable of addressing different technological and scientific aspects of the TBN program will be highly valued. A website (<http://teaming.sysplan.com/TBN>) has been established to facilitate formation of teaming arrangements between interested parties. Specific content, communications, networking, and team formation are the sole responsibility of the participants. Neither DARPA nor the Department of Defense (DoD) endorses the destination web site or the information and organizations contained therein, nor does DARPA or the DoD exercise any responsibility at the destination. This website is provided consistent with the stated purpose of this BAA.

SECTION IV: APPLICATION AND SUBMISSION INFORMATION

A. Address to Request Application Package

This announcement contains all information required to submit a proposal. No additional forms, kits, or other materials are needed. This notice constitutes the total BAA. No additional information is available, nor will a formal Request for Proposal (RFP) or additional solicitation regarding this announcement be issued. Requests for same will be disregarded.

B. Content and Form of Application Submission

1. Abstract and Proposal Information

Proposers are strongly encouraged to submit a proposal abstract in advance of a full proposal. This procedure is intended to minimize unnecessary effort in proposal preparation and review. Proposal abstracts must be submitted no later than **4:00 p.m. Eastern Time on Thursday, September 27, 2007**. Abstracts and proposals should be submitted electronically using one of the following two submission methods. Note that neither dual submissions nor paper copies are required.

1. DARPA/MTO will employ an electronic upload process, the Technical Financial Information Management System (T-FIMS) Proposal Submission System, for proposal submissions to this BAA. Abstracts and proposals should be in Microsoft Word format or PDF and submitted via a web site interface: <https://www.tfims.darpa.mil/baa>.

Please note that T-FIMS will acknowledge receipt of the submission via e-mail. This e-mail will assign a control number that should be used in all correspondence regarding the proposal abstract.

2. Offerors may elect to use the Grants.gov APPLY (<http://www.grants.gov/>) function if the applicant is seeking a grant or cooperative agreement. The APPLY function replaces the proposal submission process that other offerors follow. The APPLY function does not affect the proposal content or format. The APPLY function is electronic; offerors do not submit paper proposals in addition to the Grants.gov APPLY electronic submission.

DARPA will respond to proposal abstracts with a recommendation to propose or not propose and the time and date for submission of a full proposal. DARPA will attempt to review proposal abstracts within thirty (30) calendar days after receipt and will allow proposers at least thirty (30) calendar days after review of their proposal abstracts in order to complete and submit their proposals. Proposal abstracts will be reviewed as they are received. Early submissions of proposal abstracts and full proposals are strongly encouraged because selections may be made at any time during the evaluation process. Regardless of the recommendation, the decision to propose is the responsibility of the proposer. All submitted proposals will be fully reviewed regardless of the disposition of the proposal abstract. Proposers not submitting proposal abstracts are required to submit full proposals no later than **4:00 p.m. Eastern Time on Thursday, November 15, 2007** in order to be considered during the initial round of selections; proposals, however, received after this deadline may be evaluated up to one year from date of posting on FedBizOpps (<http://www.fedbizopps.gov/>) and Grants.gov (<http://www.grants.gov/>).

Full proposals submitted after the due date stated in the BAA or due date otherwise specified by DARPA after review of proposal abstracts may be selected contingent on the availability of funds.

The typical proposal should express a consolidated effort in support of one or more related technical concepts or ideas. Disjointed efforts should not be included into a single proposal.

Proposer Registration: Organizations planning to submit proposals via T-FIMS must register at <http://www.tfims.darpa.mil/baa>. Only the lead or prime organization should register. One registration per proposal should be submitted. This means that an organization wishing to submit to multiple, technical topic areas should complete a single registration for each proposal. The proposer makes no commitment to submit by registering. Please note that it is recommended that proposers register on T-FIMS at least a week prior to the submission deadline to allow sufficient time for completing the registration process and uploading the submission. Please also note that proposers will receive a confirmation e-mail generated from the T-FIMS electronic system as receipt that their proposal has been received. Proposal submissions made through T-FIMS cannot be larger than 50 megabytes per file.

Restrictive notices notwithstanding, proposals may be handled, for administrative purposes only, by a support contractor. This support contractor is prohibited from competition in DARPA technical research and is bound by appropriate nondisclosure requirements. Proposals and proposed abstracts may not be submitted by fax or e-mail; any so sent will be disregarded.

Proposals not meeting the format described in the BAA may not be reviewed.

All administrative correspondence and questions on this solicitation, including requests for information on how to submit a proposal abstract or full proposal to this BAA, should be directed to one of the administrative addresses listed here: BAA07-59@darpa.mil or Mary.Jacobs.ctr@darpa.mil; e-mail is preferred. A “Questions and Answers” PDF document will be posted for BAA 07-59 on the DARPA, Microsystems Technology Office solicitations page (<http://www.darpa.mil/mto/solicitations/index.html>). If you would like to have a question answered and posted on this site, please send your question to the following address: BAA07-59@darpa.mil or Mary.Jacobs.ctr@darpa.mil. DARPA intends to use electronic mail and fax for correspondence regarding BAA 07-59. Proposals and proposal abstracts may not be submitted by fax or e-mail; any so sent will be disregarded. DARPA encourages use of the Internet for retrieving the BAA and any other related information that may subsequently be provided.

Proposal Abstract Format: Proposal abstracts are strongly encouraged in advance of full proposals in order to provide potential offerors with a rapid response to minimize unnecessary effort. Proposal abstracts should follow the same general format as described for Volume I under PROPOSAL FORMAT (see below), but are expected to provide a concise summary of the elements requested in Section III. Proposers are

encouraged to include details in the abstract for which feedback from DARPA will be especially useful. The proposal abstract should provide schedule and cost information. The cover sheet should be clearly marked “PROPOSAL ABSTRACT” and the total length should not exceed {10} pages, excluding cover page and official transmittal letter. All pages shall be printed on 8-1/2 by 11 inch paper with type not smaller than 12 point. The page limitation for proposal abstracts includes all figures, tables, and charts. No formal transmittal letter is required. All proposal abstracts must be written in English. Abstracts should avoid proprietary or classified information or data not critical to the idea being presented. The proposal abstract should be submitted to DARPA/MTO through TFIMS (<https://www.tfims.darpa.mil/baa>).

Full Proposal Format: All full proposals must be in the format given below. Nonconforming proposals may be rejected without review. Proposals shall consist of two volumes. All pages shall be printed on 8-1/2 by 11 inch paper with type not smaller than 12 point. The page limitation for full proposals includes all figures, tables, and charts. Volume I: Technical and Management Proposal, may include an attached bibliography of relevant technical papers or research notes (published and unpublished) which document the technical ideas and approach upon which the proposal is based. Copies of not more than six (6) relevant papers can be included with the submission. The bibliography and attached papers are not included in the page counts given below. The submission of other supporting materials along with the proposals is strongly discouraged and will not be considered for review. Except for the attached bibliography and Section I, Volume I shall not exceed {43} pages. Maximum page lengths for each section are shown in braces {} below. All full proposals must be written in English.

2. Volume I: Technical and Management Proposal

Section I. Administrative

A. {1} **Cover sheet to include:** (1) BAA number; (2) Technical area; (3) Lead Organization Submitting proposal; (4) Type of business, selected among the following categories: “LARGE BUSINESS”, “SMALL DISADVANTAGED BUSINESS”, “OTHER SMALL BUSINESS”, “HBCU”, “MI”, “OTHER EDUCATIONAL”, OR “OTHER NONPROFIT”; (5) Contractor’s reference number (if any); (6) Other team members (if applicable) and type of business for each; (7) Proposal title; (8) Technical point of contact to include: salutation, last name, first name, street address, city, state, zip code, telephone, fax (if available), electronic mail (if available); (9) Administrative point of contact to include: salutation, last name, first name, street address, city, state, zip code, telephone, fax (if available), electronic mail (if available), total funds requested from DARPA, broken down by phase, and the amount of cost share (if any) and; (10) Date proposal was prepared; and (11) Date of proposal expiration.

B. {1} Official transmittal letter

Section II. Executive Summary

{5} This should clearly and concisely summarize the following:

- Innovative claims for the proposed programs that include a description of the unique technical solutions and approaches being proposed.
- The quantitative end-of-program performance goals and the key milestones associated with the development effort.

Section III. Detailed Proposal Information

- A. {17} **Technical Rationale & Approach.** A concise section outlining the scientific and technical challenges, unique approaches, and potential anticipated technical solutions to the challenges that will be addressed. This statement should demonstrate that the proposer has a clear understanding of the state-of-the-art and the unique challenges associated with the proposed approach; and should provide sufficient technical details, calculations, models, measurements, as necessary so as to permit complete evaluation of the feasibility of the idea.
- B. {4 + 1 for table} **Program Plan & Risk Assessment.** A narrative explaining the explicit timelines, and plan for milestone completion. The proposed period of performance of the overall program should be clearly stated. Milestones must be associated with demonstrable, quantitative measures of performance, and should be summarized in a single table. Proposers shall clearly define all deliverables associated with the proposed research; all proprietary assertions to intellectual property of all types, including any background inventions, shall be set forth in detail. (See Intellectual Property.)
- C. {2} **Teaming & Management Plan.** A management plan that describes how the different members of the team will collaborate to demonstrate viable solutions to the program challenges. Overall program costs should be presented by year and by team member.
- D. {4} **Capabilities.** A section describing relevant prior work, the background, qualifications and relevant experience of key individuals to be assigned to the program and the facilities and equipment to be utilized. Please do not attach supporting material (CDs, movies, etc.) to the proposal, except as noted in Section IV below.
- E. {2} **Technology Transition Plan.** A discussion outlining how the technology to be developed in this program may be transitioned to industrial partners or follow-on development efforts.
- F. {5} **Slide Summary.** PowerPoint-type slides (i.e., landscape formatted for presentation) that succinctly highlight the major aspects of the proposal in a manner suitable for presentation to DARPA management.
- G. {3} **Statement of Work (SOW).** The SOW should be written in plain English, outlining the scope of the effort (by Phase) and citing specific tasks to be performed, contractor requirements, and data and/or material deliverables.”

Section IV. Additional Information {Optional}

- A. A brief bibliography of relevant technical papers and research notes (published and unpublished) which document the technical ideas upon which the proposal is based may be provided. Copies of not more than six (6) relevant papers can be

included in the submission. This section does not count towards the overall page limit for Volume I.

Section IV. Additional Information

A brief bibliography of relevant technical papers and research notes (published and unpublished) which document the technical ideas upon which the proposal is based. Copies of not more than three (3) relevant papers can be included in the submission.

3. Volume II, Cost Proposal – {No Page Limit}

Cover sheet to include: (1) BAA number; (2) Technical area; (3) Lead Organization Submitting proposal; (4) Type of business, selected among the following categories: “LARGE BUSINESS”, “SMALL DISADVANTAGED BUSINESS”, “OTHER SMALL BUSINESS”, “HBCU”, “MI”, “OTHER EDUCATIONAL”, OR “OTHER NONPROFIT”; (5) Contractor’s reference number (if any); (6) Other team members (if applicable) and type of business for each; (7) Proposal title; (8) Technical point of contact to include: salutation, last name, first name, street address, city, state, zip code, telephone, fax (if available), electronic mail (if available); (9) Administrative point of contact to include: salutation, last name, first name, street address, city, state, zip code, telephone, fax (if available), and electronic mail (if available); (10) Award instrument requested: cost-plus-fixed-fee (CPFF), cost-contract—no fee, cost sharing contract – no fee, or other type of procurement contract (*specify*), grant, cooperative agreement, or other transaction; (11) Place(s) and period(s) of performance; (12) Total proposed cost separated by basic award and option(s) (if any); (13) Name, address, and telephone number of the offeror’s cognizant Defense Contract Management Agency (DCMA) administration office (*if known*); (14) Name, address, and telephone number of the offeror’s cognizant Defense Contract Audit Agency (DCAA) audit office (*if known*); (15) Date proposal was prepared; (16) DUNS number; (17) TIN number; and (18) Cage Code; (19) Subcontractor Information; and (20) Proposal validity period.

Detailed cost breakdown to include: (1) total program cost broken down by major cost items (direct labor, including labor categories; subcontracts; materials; other direct costs, overhead charges, etc.) and further broken down task and phase; (2) major program tasks by year; (3) an itemization of major subcontracts and equipment purchases; (4) an itemization of any information technology (IT) purchase; (5) a summary of projected funding requirements by month; and (6) the source, nature, and amount of any industry cost-sharing. Where the effort consists of multiple portions which could reasonably be partitioned for purposes of funding, these should be identified as options with separate cost estimates for each. NOTE: for IT and equipment purchases, include a letter stating why the offeror cannot provide the requested resources from its own funding.

Supporting cost and pricing information in sufficient detail to substantiate the summary cost estimates in B. above. Include a description of the method used to estimate costs and supporting documentation. Note: “cost or pricing data” as defined in FAR Subpart 15.4 shall be required if the offeror is seeking a procurement contract award of \$650,000 or

greater unless the offeror request an exception from the requirement to submit cost of pricing data. “Cost or pricing data” are not required if the offeror proposes an award instrument other than a procurement contract (e.g., a grant, cooperative agreement, or other transaction.)

C. Submission Dates and Times

1. Proposal Abstract Date

The proposal abstract must be submitted to DARPA/MTO, via T-FIMS <https://www.tfims.darpa.mil/baa>, no later than **4:00 p.m., Eastern Time, Thursday, September 27, 2007** Proposal abstracts received after this time and date may not be reviewed.

2. Full Proposal Date

The full proposal must be submitted to T-FIMS or Grants.gov no later than **4:00 p.m., Eastern Time, Thursday, November 15, 2007**, in order to be considered during the initial round of selections; however, proposals received after this deadline may be received and evaluated up to one year from date of posting on FedBizOpps. Full proposals submitted after the due date specified in the BAA or due date otherwise specified by DARPA after review of proposal abstracts may be selected contingent upon the availability of funds.

DARPA will acknowledge receipt of complete submissions via email and assign control numbers that should be used in all further correspondence regarding proposals.

Failure to comply with the submission procedures may result in the submission not being evaluated.

SECTION V: APPLICATION REVIEW INFORMATION

A. Evaluation Criteria

Evaluation of proposals will be accomplished through a scientific/technical review of each proposal using the following criteria: (1) Overall Scientific and Technical Merit; (2) Proposer’s Capabilities and/or Related Experience; (3) Realism of Proposed Schedule. (4) Potential Contribution and Relevance to the DARPA Mission; (5) Plans and Capability to Accomplish Technology Transition; and (6) Cost Realism. Proposals will not be evaluated against each other since they are not submitted in accordance with a common work statement. DARPA’s intent is to review proposals as soon as possible after they arrive; proposals, however, may be reviewed periodically for administrative reasons. The following are descriptions of the above listed criteria:

1. Overall Scientific and Technical Merit

The proposed technical approach is feasible, achievable, complete and supported by a proposed technical team that has the expertise and experience to accomplish the proposed

tasks. Task descriptions and associated technical elements provided are complete and in a logical sequence with all proposed deliverables clearly defined such that final results that achieve the goal can be expected as a result of award. The proposal identifies major technical risks and planned mitigation efforts are clearly defined and feasible.

2. Proposer's Capabilities and/or Related Experience

The proposer's prior experience in similar efforts must clearly demonstrate an ability to deliver results that meet the proposed technical performance within the proposed budget and schedule. The proposed team has the expertise to manage the cost and schedule. Similar efforts completed/ongoing by the proposer in this area are fully described including identification of other Government sponsors.

3. Realism of Proposed Schedule

The proposer's abilities to aggressively pursue performance metrics in the shortest timeframe and to accurately account for that timeframe will be evaluated.

4. Potential Contribution and Relevance to the DARPA Mission

The potential contributions of the proposed effort with relevance to the national technology base will be evaluated. Specifically, DARPA's mission is to maintain the technological superiority of the U.S. military and prevent technological surprise from harming our national security by sponsoring revolutionary, high-payoff research that bridges the gap between fundamental discoveries and their military use.

5. Plans and Capability to Accomplish Technology Transition

The capability to transition the technology to the research, industrial, and operational military communities in such a way as to enhance U.S. defense.

6. Cost Realism

The objective of this criterion is to establish that the proposed costs are realistic for the technical and management approach offered, as well as to determine the proposer's practical understanding of the effort. This will be principally measured by cost per labor-hour and number of labor-hours proposed. The evaluation criterion recognize that undue emphasis on cost may motivate proposers to offer low-risk ideas with minimum uncertainty and to staff the effort with junior personnel in order to be in a more competitive posture. DARPA discourages such cost strategies. Cost reduction approaches that will be received favorably include innovative management concepts that maximize direct funding for technology and limit diversion of funds into overhead.

After selection and before award the contracting officer will negotiate cost/price reasonableness.

Award(s) will be made to proposers whose proposals are determined to be the most advantageous to the Government, all factors considered, including the potential contributions of the proposed work to the overall research program and the availability of funding for the effort. Award(s) may be made to any proposer(s) whose proposal(s) is determined selectable regardless of its overall rating.

NOTE: PROPOSERS ARE CAUTIONED THAT EVALUATION RATINGS MAY BE LOWERED AND/OR PROPOSALS REJECTED IF SUBMITTAL INSTRUCTIONS ARE NOT FOLLOWED.

B. Review and Selection Process

It is the policy of DARPA to ensure impartial, equitable, comprehensive proposal evaluations and to select the source (or sources) whose offer meets the Government's technical, policy, and programmatic goals. Pursuant to FAR 35.016, the primary basis for selecting proposals for acceptance shall be technical, importance to agency programs, and fund availability. In order to provide the desired evaluation, qualified Government personnel will conduct reviews and (if necessary) convene panels of experts in the appropriate areas.

Proposals will not be evaluated against each other since they are not submitted in accordance with a common work statement. DARPA's intent is to review proposals as soon as possible after they arrive; however, proposals may be reviewed periodically for administrative reasons. For evaluation purposes, a proposal is the document described in "Proposal Information", Section IV.B. Other supporting or background materials submitted with the proposal will be considered for the reviewer's convenience only and not considered as part of the proposal.

Restrictive notices notwithstanding, proposals may be handled for administrative purposes by support contractors. These support contractors are prohibited from competition in DARPA technical research and are bound by appropriate non-disclosure requirements.

Subject to the restrictions set forth in FAR 37.203(d), input on technical aspects of the proposals may be solicited by DARPA from non-Government consultants /experts who are strictly bound by the appropriate non-disclosure requirements.

It is the policy of DARPA to treat all proposals as competitive information and to disclose their contents only for the purpose of evaluation. No proposals will be returned. Upon completion of the source selection process, the original of each proposal received will be retained at DARPA and all other copies will be destroyed.

SECTION VI: AWARD ADMINISTRATION INFORMATION

A. Award Notices

As soon as the evaluation of a proposal is complete, the offeror will be notified that 1) the proposal has been selected for funding pending contract negotiations, or 2) the proposal has not been selected. These official notifications will be sent via U. S. mail to the Technical POC identified on the proposal coversheet.

B. Administrative and National Policy Requirements

1. Security

The Government anticipates that proposals submitted under this BAA will be unclassified. In the event that a proposer chooses to submit a classified proposal or submit any documentation that may be classified, the following information is applicable.

Security classification guidance on a DD Form 254 will not be provided at this time since DARPA is soliciting ideas only. After reviewing the incoming proposals, if a determination is made that the award instrument may result in access to classified information, a DD Form 254 will be issued and attached as part of the award. Proposers choosing to submit a classified proposal must first receive permission from the Original Classification Authority to use their information in replying to this BAA. Applicable classification guide(s) should be submitted to ensure that the proposal is protected appropriately.

Classified submissions shall be in accordance with the following guidance:

Collateral Classified Information: Use classification and marking guidance provided by previously issued security classification guides, the Information Security Regulation (DoD 5200.1-R), and the National Industrial Security Program Operating Manual (DoD 5220.22-M) when marking and transmitting information previously classified by another original classification authority. Classified information at the Confidential and Secret level may only be mailed via U.S. Postal Service (USPS) Registered Mail or U.S. Postal Service Express Mail. All classified information will be enclosed in opaque inner and outer covers and double wrapped. The inner envelope shall be sealed and plainly marked with the assigned classification and addresses of both sender and addressee. The inner envelope shall be address to:

Defense Advanced Research Projects Agency
ATTN: (Microsystems Technology Office)
Reference: (BAA 07-59)
3701 North Fairfax Drive
Arlington, VA 22203-1714

The outer envelope shall be sealed with no identification as to the classification of its contents and addressed to:

Defense Advanced Research Projects Agency
Security & Intelligence Directorate, Attn: CDR
3701 North Fairfax Drive
Arlington, VA 22203-1714

All Top Secret materials should be hand carried via an authorized, two-person courier team to the DARPA CDR.

Special Access Program (SAP) Information: Contact the DARPA Special Access Program Central Office (SAPCO) 703-526-4052 for further guidance and instructions prior to transmitting SAP information to DARPA. Top Secret SAP, must be transmitted via approved methods for such material. Consult the DoD Overprint to the National Industrial Security Program Operating Manual for further guidance. *Prior to transmitting SAP material*, it is strongly recommended that you coordinate your submission with the DARPA SAPCO.

Sensitive Compartmented Information (SCI) Data: Contact the DARPA Special Security Office (SSO) at 703-812-1994/1984 for the correct SCI courier address and instructions. All SCI should be transmitted through your servicing Special Security Officer (SSO). SCI data must be transmitted through SCI channels only (i.e., approved SCI Facility to SCI facility via secure fax).

Proprietary Data: All proposals containing proprietary data should have the cover page and each page containing proprietary data clearly marked as containing proprietary data. It is the Offeror's responsibility to clearly define to the Government what is considered proprietary data.

Offerors must have existing and in-place prior to execution of an award, approved capabilities (personnel and facilities) to perform research and development at the classification level they propose. It is the policy of DARPA to treat all proposals as competitive information, and to disclose their contents only for the purpose of evaluation. Proposals will not be returned. The original of each proposal received will be retained at DARPA and all other non-required copies destroyed. A certification of destruction may be requested, provided that the formal request is received at this office within 5 days after unsuccessful notification.

2. Intellectual Property

Procurement Contract Proposers

Noncommercial Items (Technical Data and Computer Software)

Proposers responding to this BAA requesting a procurement contract to be issued under the FAR/DFARS, shall identify all noncommercial technical data, and noncommercial computer software that it plans to generate, develop, and/or deliver under any proposed award instrument in which the Government will acquire less than unlimited rights, and to assert specific restrictions on those deliverables. Proposers shall follow the format under DFARS 252.227-7017 for this stated purpose. In the event that proposers do not submit

the list, the Government will assume that it automatically has “unlimited rights” to all noncommercial technical data and noncommercial computer software generated, developed, and/or delivered under any award instrument, unless it is substantiated that development of the noncommercial technical data and noncommercial computer software occurred with mixed funding. If mixed funding is anticipated in the development of noncommercial technical data, and noncommercial computer software generated, developed, and/or delivered under any award instrument, then proposers should identify the data and software in question, as subject to Government Purpose Rights (GPR). In accordance with DFARS 252.227-7013 Rights in Technical Data - Noncommercial Items, and DFARS 252.227-7014 Rights in Noncommercial Computer Software and Noncommercial Computer Software Documentation, the Government will automatically assume that any such GPR restriction is limited to a period of five (5) years in accordance with the applicable DFARS clauses, at which time the Government will acquire “unlimited rights” unless the parties agree otherwise. Proposers are admonished that the Government will use the list during the source selection evaluation process to evaluate the impact of any identified restrictions, and may request additional information from the proposer, as may be necessary, to evaluate the proposer’s assertions. If no restrictions are intended, then the proposer should state “NONE.”

A sample list for complying with this request is as follows:

NONCOMMERCIAL			
Technical Data Computer Software To be Furnished With Restrictions	Basis for Assertion	Asserted Rights Category	Name of Person Asserting Restrictions
(LIST)	(LIST)	(LIST)	(LIST)

Commercial Items (Technical Data and Computer Software)

Proposers responding to this BAA requesting a procurement contract to be issued under the FAR/DFARS, shall identify all commercial technical data, and commercial computer software that may be embedded in any noncommercial deliverables contemplated under the research effort, along with any applicable restrictions on the Government’s use of such commercial technical data and/or commercial computer software. In the event that proposers do not submit the list, the Government will assume that there are no restrictions on the Government’s use of such commercial items. The Government may use the list during the source selection evaluation process to evaluate the impact of any identified restrictions, and may request additional information from the proposer, as may be necessary, to evaluate the proposer’s assertions. If no restrictions are intended, then the proposer should state “NONE.”

A sample list for complying with this request is as follows:

COMMERCIAL			
Technical Data Computer Software To be Furnished With Restrictions	Basis for Assertion	Asserted Rights Category	Name of Person Asserting Restrictions
(LIST)	(LIST)	(LIST)	(LIST)

*NonProcurement Contract Proposers - Noncommercial and Commercial
Items (Technical Data and Computer Software)*

Proposers responding to this BAA requesting a Grant, Cooperative Agreement, Technology Investment Agreement, or Other Transaction for Prototype shall follow the applicable rules and regulations governing these various award instruments, but in all cases should appropriately identify any potential restrictions on the Government's use of any Intellectual Property contemplated under those award instruments in question. This includes both Noncommercial Items and Commercial Items. Although not required, proposers may use a format similar to that described in Paragraphs 1.a and 1.b above. The Government may use the list during the source selection evaluation process to evaluate the impact of any identified restrictions, and may request additional information from the proposer, as may be necessary, to evaluate the proposer's assertions. If no restrictions are intended, then the proposer should state "NONE."

All Proposers – Patents

Include documentation proving your ownership of or possession of appropriate licensing rights to all patented inventions (or inventions for which a patent application has been filed) that will be utilized under your proposal for the DARPA program. If a patent application has been filed for an invention that your proposal utilizes, but the application has not yet been made publicly available and contains proprietary information, you may provide only the patent number, inventor name(s), assignee names (if any), filing date, filing date of any related provisional application, and a summary of the patent title, together with either: 1) a representation that you own the invention, or 2) proof of possession of appropriate licensing rights in the invention.

All Proposers-Intellectual Property Representations

Provide a good faith representation that you either own or possess appropriate licensing rights to all other intellectual property that will be utilized under your proposal for the DARPA program. Additionally, offerors shall provide a short summary for each item asserted with less than unlimited rights that describes the nature of the restriction and the intended use of the intellectual property in the conduct of the proposed research.

3. Meeting and travel requirements

There will be a program kickoff meeting and annual PI meetings and all key participants are required to attend. Performers should also anticipate periodic site visits at the Program Manager's discretion.

4. Human use

Proposals selected for contract award are required to comply with provisions of the Common Rule (32 CFR 219) on the protection of human subjects in research (<http://www.dtic.mil/biosys/downloads/32cfr219.pdf>) and the Department of Defense Directive 3216.2 (<http://www.dtic.mil/whs/directives/corres/html2/d32162x.htm>). All proposals that involve the use of human subjects are required to include documentation of their ability to follow Federal guidelines for the protection of human subjects. This includes, but is not limited to, protocol approval mechanisms, approved Institutional Review Boards, and Federal Wide Assurances. These requirements are based on expected human use issues sometime during the entire length of the proposed effort.

For proposals involving "greater than minimal risk" to human subjects within the first year of the project, performers must provide evidence of protocol submission to a federally approved IRB at the time of final proposal submission to DARPA. For proposals that are forecasted to involve "greater than minimal risk" after the first year, a discussion on how and when the offeror will comply with submission to a federally approved IRB needs to be provided in the submission. More information on applicable federal regulations can be found at the Department of Health and Human Services – Office of Human Research Protections website (<http://www.dhhs.gov/ohrp/>).

Any aspects of a proposal involving human use should be specifically called out as a separate element of the statement of work and cost proposal to allow for independent review and approval of those elements.

5. Animal Use

Any Recipient performing research, experimentation, or testing involving the use of animals shall comply with the rules on animal acquisition, transport, care, handling, and use in : (i) 9 CFR parts 1-4, Department of Agriculture rules that implement the Laboratory Animal Welfare Act of 1966, as amended, (7 U.S.C. 2131-2159); and (ii) the guidelines described in National Institutes of Health Publication No. 86-23, "Guide for the Care and Use of Laboratory Animals."

6. Publication approval

Offerors are advised if they propose grants or cooperative agreements, DARPA may elect to award other award instruments. DARPA will make this election if it determines that the research resulting from the proposed program will present a high likelihood of disclosing performance characteristics of military systems or manufacturing technologies that are unique and critical to defense. Any resulting award will include a requirement for DARPA permission before publishing any information or results on the program.

The following provision will be incorporated into any resultant procurement contract or other transaction:

When submitting material for written approval for open publication as described in subparagraph (a) above, the Contractor/Awardee must submit a request for public release to the DARPA TIO and include the following information: 1) Document Information: document title, document author, short plain-language description of technology discussed in the material (approx. 30 words), number of pages (or minutes of video) and document type (briefing, report, abstract, article, or paper); 2) Event Information: event type (conference, principle investigator meeting, article or paper), event date, desired date for DARPA's approval; 3) DARPA Sponsor: DARPA Program Manager, DARPA office, and contract number; and 4) Contractor/Awardee's Information: POC name, e-mail and phone. Allow four weeks for processing; due dates under four weeks require a justification. Unusual electronic file formats may require additional processing time. Requests can be sent either via e-mail to tio@darpa.mil or via 3701 North Fairfax Drive, Arlington VA 22203-1714, telephone (571) 218-4235. Refer to www.darpa.mil/tio for information about DARPA's public release process.

7. Export Control

Should this project develop beyond fundamental research (basic and applied research ordinarily published and shared broadly within the scientific community) with military or dual-use applications the following apply:

(1) The Contractor shall comply with all U. S. export control laws and regulations, including the International Traffic in Arms Regulations (ITAR), 22 CFR Parts 120 through 130, and the Export Administration Regulations (EAR), 15 CFR Parts 730 through 799, in the performance of this contract. In the absence of available license exemptions/exceptions, the Contractor shall be responsible for obtaining the appropriate licenses or other approvals, for obtaining the appropriate licenses or other approvals, if required, for exports of (including deemed exports) hardware, technical data, and software, or for the provision of technical assistance.

(2) The Contractor shall be responsible for obtaining export licenses, if required, before utilizing foreign persons in the performance of this contract, including instances where the work is to be performed on-site at any Government installation (whether in or outside the United States), where the foreign person will have access to export-controlled technical data or software.

(3) The Contractor shall be responsible for all regulatory record keeping requirements associated with the use of licenses and license exemptions/exceptions.

(4) The Contractor shall be responsible for ensuring that the provisions of this clause apply to its subcontractors.

8. Subcontracting

Pursuant to Section 8(d) of the Small Business Act (15 U.S.C. 637(d)), it is the policy of the Government to enable small business and small disadvantaged business concerns to be considered fairly as subcontractors to contractors performing work or rendering services as prime contractors or subcontractors under Government contracts, and to assure that prime contractors and subcontractors carry out this policy. Each proposer who submits a contract proposal and includes subcontractors is required to submit a subcontracting plan in accordance with FAR 19.702(a) (1) and (2) should do so with their proposal. The plan format is outlined in FAR 19.704.

9. Reporting

The number and types of reports will be specified in the award document, but will include as a minimum quarterly financial status reports. The reports shall be prepared and submitted in accordance with the procedures contained in the award document and mutually agreed on before award. Reports and briefing material will also be required as appropriate to document progress in accomplishing program metrics. A Final Report that summarizes the project and tasks will be required at the conclusion of the performance period for the award, notwithstanding the fact that the research may be continued under a follow-on vehicle.

Central Contractor Registration: Selected proposers not already registered in the Central Contractor Registry (CCR) will be required to register in CCR prior to any award under this BAA. Information on CCR registration is available at <http://www.ccr.gov>.

Representations and Certifications: In accordance with FAR 4.1201, prospective proposers shall complete electronic annual representations and certifications at <http://orca.bpn.gov>.

Wide Area WorkFlow (WAWF): Unless using another approved electronic invoicing system, performers will be required to submit invoices for payment directly via the Internet/WAWF at <http://wawf.eb.mil>. Registration to WAWF will be required prior to any award under this BAA.

T-FIMS: The award document for each proposal selected and funded will contain a mandatory requirement for four DARPA Quarterly Status Reports each year, one of which will be an annual project summary. These reports will be electronically submitted by each awardee under this BAA via the DARPA Technical – Financial Information Management System (T-FIMS). The T-FIMS URL and instructions will be furnished by the contracting agent upon award.

SECTION VII: AGENCY CONTACTS

DARPA will use electronic mail for all technical and administrative correspondence regarding this BAA, with the exception of selected/not-selected notifications.

Administrative, technical or contractual questions should be sent via e-mail to BAA07-59@darpa.mil or mary.jacobs.ctr@darpa.mil. If e-mail is not available, fax questions to (703) 741-0079, Attention: BAA 07-59. All requests must include the name, email address, and phone number of a point of contact.

The technical POC for this effort is:

Thomas Kenny, Ph.D.
Program Manager
DARPA/MTO
3701 North Fairfax Drive
Arlington, VA 22203-1714
Fax: (703) 741-0079
Email: Thomas.kenny@darpa.mil